

RESPONSE UNDER 37 C.F.R. § 1.111
U.S. Application No.: 10/516,693

Attorney Docket No.: Q85096

REMARKS

Claims 1-2 are all the claims pending in the application.

Claims 1 and 2 are rejected.

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiyokawa et al. (U.S. Patent No. 5,289,263).

The Applicants traverse the rejections and request reconsideration.

Claim rejections Under 35 U.S.C. § 103

Rejection of claims 1 and 2 based on Kiyokawa et al.

The present invention requires the CCD linear sensor to include a large number of pixels linearly arranged in a predetermined order, for reading out stored charges successively from the first pixel according to a transfer pulse signal and successively outputting stored charges of all the pixels as electric signals. Kiyokawa does not suggest any specific arrangement of the pixels or the transferring of the pulse signal as required by the present invention.

More importantly, the present invention requires the signal processing member to repeatedly detect the edge positions of the wafer at a plurality of optional points. Such an edge detection is required to be based on the a signal from the CCD linear sensor and a signal from the rotation detecting member. These edge positions are required to be stored in memory. Based on the position of the edge, the present invention is required to detect one of an orientation-flat position, notch position and center position of the wafer.

Apart from simply exposing the edge to light, Kiyokawa does not suggest detecting the edge position. Further, it does not suggest detecting one of an orientation flat-position, notch position and the center position of the wafer.

In the present invention, the up-down counter up-counts during the normal rotation of the table. It down-counts during the reverse rotation of the table. The counted value increases/decreases, and is equal to the value set in advance (the angular value information from the measuring angle set register 21b). CCD data is thus acquired. At this time, the CPU never monitors the rotating position of the wafer.

On the other hand, in Kiyokawa, the wafer pre-alignment sensor employs a pulse sensor for "a wafer rotating member", and it presumes that the wafer rotates to the predetermined position if an instruction is output to the pulse motor. Further, an instruction to the pulse motor (the presumed rotation position) is monitored through a counter.

In the present invention, owing to the structure including "up-down counter" "comparator" and the "measuring angle set register", it is possible to sequentially load the measuring data without stopping the rotating member. On the contrary, in Kiyokawa, the measuring data is loaded only when the step feed of the rotating member is stopped. Therefore, a time for measuring one rotation of a wafer in the present invention is shorter than that in Kiyokawa. Further, a highly precise measurement can be made since a rotating angular is monitored by the rotation detection member which detects an actual rotation result instead of an instruction (the presumed rotation position) to a rotation member. Thus, according to the

present invention, it is possible to do measurements faster without diminishing the measuring precision.

Further, in the present invention, the CPU does not monitor the rotating position of a wafer. On the contrary, in Kiyokawa, the CPU monitors the rotating position of a wafer. Therefore, load of the CPU in the present invention is less than that in Kiyokawa. Thus, according to the present invention, since it is possible to use a CPU with a lower performance, further miniaturization and lower costs are possible.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP 2142 citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The “all limitations” prong of the three prong test for obviousness must fail because of the above noted differences between present invention and Kiyokawa. Since all the limitations are not suggested, the “motivation to modify” prong of the three prong test must also fail. Therefore, the Examiner has not established *prima facie* obviousness of the present invention from the teachings of Kiyokawa.

Claim 2 includes limitations analogous to claim 1. Therefore, the arguments discussed above are analogously valid. In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points

remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Regarding the difference between the present invention and Kiyokawa: (5.1) Regarding the present invention:

The up-down counter up-counts during the normal rotation of the table and down-counts during the reverse rotation of the table so that the counted value increases/decreases, and it is equal to the value set in advance (the angular value information from the measuring angle set register 21b), CCD data is acquired.

At this time, the CPU never monitors the rotating position of the wafer.

Regarding Kiyokawa:

The wafer pre-alignment sensor employs a pulse sensor for "a wafer rotating member", and it presumes that the wafer rotates to the predetermined position if an instruction is output to the pulse motor.

Further, an instruction to the pulse motor (the presumed rotation position) is monitored through a counter.

Regarding the difference between the present invention and Kiyokawa (1ST difference)

In the present invention, owing to the structure including "up-down counter" "comparator" "measuring angle set register, it is possible to sequentially load the measuring data without stopping the rotating member. On the contrary, in Kiyokawa, the measuring data is loaded only when the step feed of the rotating member is stopped. Therefore, it is possible that a time for measuring one rotation of a wafer in the present invention is shorter than that in Kiyokawa.

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Further, since a rotating angular is monitored by the rotation detection member which detects an actual rotation result instead of an instruction (the presumed rotation position) to a rotation member, the measure is highly precise.

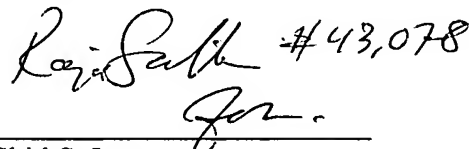
Thus, according to the present invention, it is possible to speed up a measuring time without diminishing the measuring precision.

(2nd difference)

In the present invention, the CPU does not monitor the rotating position of a wafer. On the contrary, in Kiyokawa, the CPU monitors the rotating position of a wafer. Therefore, load of the CPU in the present invention is less than that in Kiyokawa. Thus, according to the present invention, since it is possible to use a CPU of which performance is lower, it is possible to realize the miniaturization and the low cost.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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